

621.314

THE *Pack*

Packard

TRANSFORMER



THE

Packard

ELECTRIC COMPANY

WARREN, OHIO.



THE ...



ELECTRIC

COMPANY,

WARREN,

OHIO.



J. W. PACKARD,

PRESIDENT.

W. D. PACKARD,

SECRETARY & TREASURER.



INTRODUCTION.

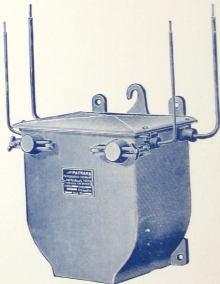
WE issue this book to all users of alternating current, to bring to their notice a transformer which we claim to be superior to any on the market to-day. Our points of superiority are: First, REGULATION; Second, GENERAL EFFICIENCY; Third, INSULATION; Fourth, GENERAL NEAT AND COMPACT APPEARANCE; Fifth, FUSE BLOCK FOR PRIMARY FUSING.

In lamp experiences, there has been a long felt need for a transformer with better regulation than has been obtained in the past, and, feeling certain that such a transformer would meet with a large sale we have put on the market this instrument, after having satisfied ourselves of the excellence of the apparatus by tests made by the leading experts of the country. We will be pleased to furnish copies of these tests to intending purchasers.

In short, we claim, and are ready to prove, that our transformer combines the best points in mechanical and electrical construction of any transformer on the market, and by making a specialty of this business, we devote our best energies to it instead of to the generators as the larger Companies do, leaving transformers for an after consideration. That this is the case, is shown by the fact that manufacturers of alternators make machines with all sorts of mechanical devices and compound windings to keep the regulation good, and then frequently lose the benefit of this whole expensive and complicated apparatus in the poor regulation of the transformer.

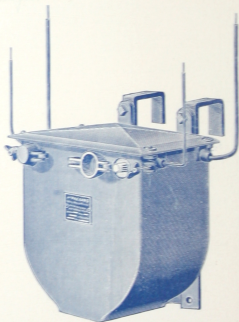
An examination of our fuse block will convince you that it is the best and simplest thing of the kind ever invented.

To show that we are willing to back up the above statements in every way, we guarantee each and every transformer to be entirely satisfactory in every respect, and will replace or repair any one that burns out under normal load free of charge to our customers. We will further agree to take back any transformer that does not prove entirely satisfactory, allowing full credit for same.

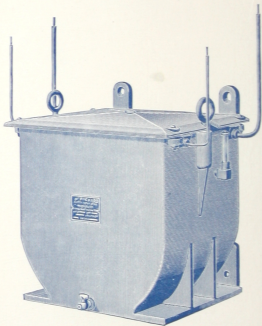


TYPE . . .
OF
PACKARD TRANSFORMER,
UP
TO 30 LIGHTS,
INCLUSIVE.





TYPE . .
OF
PACKARD TRANSFORMER,
FROM
40 TO 125 LIGHTS,
INCLUSIVE.



TYPE . .
OF
PACKARD TRANSFORMER,
200 TO 300 LIGHTS,
INCLUSIVE.



OIL INSULATION.
SEPARATE
FUSE BOX
ACCOMPANYING EACH
TRANSFORMER.

REGULATION AND EFFICIENCY OF TRANSFORMERS.

In the design of transformers, most of the larger manufacturers seem to have been striving for a full load efficiency, sacrificing every other point of what a good transformer should be. The all-day efficiency is of far more consequence than the full load efficiency, as the $C^2 R$ loss is comparatively small in actual running use. Another point of great consequence is the regulation. In fact, this point is vital when high efficiency lamps are used. The shortening of the life of the lamps by the poor regulation of the transformers will make a greater inroad on dividends to the central station than a few per cent. loss in the efficiency of the transformers. Even where low efficiency, long life lamps are used, the difference in potential makes a very disagreeable light, and as these lamps are used mostly in small plants where small transformers are required, bad regulation is more apparent still, as a small transformer will not, as a rule, regulate as well as a large one. In large cities where the lights are grouped more, the larger transformers are usually used, but here again we meet a demand for a better and more uniform light, and have, generally, the high efficiency lamp to deal with, which requires the best regulation to insure a satisfactory life.

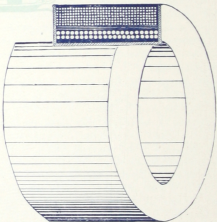
We believe it is generally conceded that the lamp of the future *is* a high efficiency, shorter life lamp. Just as sure, then, must the transformer of the future have good regulation, for the use of the first is

impracticable on alternating currents without the latter. It seems surprising that more attention has not been paid to this in the past. The **Packard Transformer** will fill a long felt want to many who have studied this subject of regulation as related to lamp renewals, and have become convinced of its importance.

The **Packard Transformer** is designed for regulation with the aim of getting that point as good as possible without cutting down the general efficiency below a high standard. The results plainly show that, although the regulation is much superior to that of any other transformer, the general efficiency is just as good as the best.

In the design of the coil, the ring form has been adopted as for a given transformer, the wire is shorter than any other possible form, and this lowers the resistance of the copper, and lessens the fall of potential. Another reason is the very small leakage and the excellence of the magnetic circuit, which is magnetically without a break. This is a point that no other transformer can lay claim to in the same degree; in fact, it does not exist in any form with which we are familiar, all having at least one complete break, some two, and in some a very bad magnetic connection and not the proper laminations to insure the best results in preventing eddy currents.

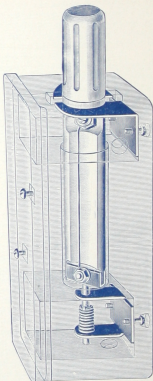




INSULATION.

One of the most important features about a good transformer is the proper insulation, and to this we have paid particular attention. The spools are formed of the best quality of Vulcabeston, which is universally conceded to be the best possible material in insulating and heat resisting properties. They are further insulated with mica and a prepared cloth; the wire is wound on while the whole is kept hot and thoroughly saturated with our new compound "Sappho." When the coil is completed, the insulating compound and wire form one solid, compact mass, which is perfectly waterproof. The use of a heavy, solid spool of special Vulcabeston in which the coils are wound, and which completely protects them from mechanical injury, is, it will be readily acknowledged, by anyone, far superior to the usual practice of simply "tapeing" the exterior of a rectangular coil, the insulation of which has already been weakened by the numerous sharp bends necessary in winding it. We claim particular merit for this method of construction, which is, we believe, unique and not used in any other transformer. It combines the high insulation, safety from lightning discharges, and other advantages of an oil transformer, without the usual dirt, unhandiness and disagreeable features. A special test we have frequently made on our transformers is to run them heavily overloaded at double their normal voltage with the case full of water. This test they stand perfectly.

Last, but not least of importance, is the primary fusing arrangement. This is more of a mechanical point than electrical, but we are convinced that this same thing has a considerable effect on the regulation and efficiency of transformers. The poor contacts and constantly weakening and badly adjusted springs that are used in most fusing arrangements, by their heating prove the resistance of these parts, and the power consumed in heating deducts from the efficiency just as much as a poor grade of iron or any other defect in the electrical design. This is not taken into account in the published tests of other transformers, and, in fact, does not show up as badly when the apparatus is new as after a time of running. An examination of our fusing device will convince anyone of its superiority over anything else on the market to-day in the shape of fuse blocks, both mechanically and electrically.





FUSING DEVICE.

The fuse block is a distinct and novel departure in transformer fusing devices. It is one of the many points of absolute superiority in the PACKARD TRANSFORMER that cannot be questioned.

The cut plainly shows the principle of construction and the extreme simplicity of the arrangement. The plug is of glazed porcelain, with brass cap at one end, and brass bar at right angles to the plug at the other end, carrying the fuse. The cap butts up against a plug working in a bronze guide, and closes up the spiral spring of phosphor-bronze wire seen in the back end of box. This gives a firm pressure of the plug against the adjustable ring in the front end of the box, thus insuring a perfect adjustment and the best possible contact. Pushing in the plug and giving a quarter turn in either direction closes the circuit. To break the circuit, simply turn the plug quarter way in either direction, and it releases itself with a quick and positive break, and at the same time the head protrudes out of the box, so as to be easily grasped and removed. Then the same or another plug may be inserted with fuse.

The absence of all delicate springs that are liable to get out of adjustment or become slightly bent, so as to work badly, or not at all, will be appreciated by all who have had the care of other style apparatus. The springs cannot be injured, or the adjustment destroyed in the slightest, unless absolutely broken.

To replace a fuse on one of these transformers is easier and safer on a stormy night than on any other style in broad daylight. The plugs are interchangeable on all sizes, and the transformer can be fused without removing gloves or mittens, as no tools whatever are necessary. Perfect safety is assured, as the lineman does not touch anything but the porcelain end of the plug. The fuse is effectually protected from being broken when carried in the pocket or tool bag by the curved slot that it lays in on the plug. The fuses are held by slotted nuts that can be unscrewed by a screw-driver, pliers, a common nail or the fingers.

The danger of wetting terminals or transformer coils in rain or snow is entirely eliminated, as the small door is only open for such a short time, and

the terminals are all enclosed in the porcelain box, and are not exposed at all.

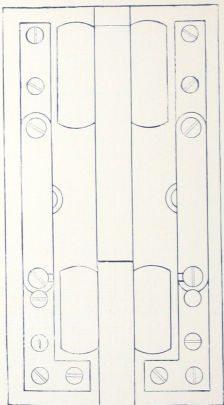
It is impossible for one fuse to "blow" the other, as they are on opposite sides of the box. The objection to having fuses in the same iron case with the coil is entirely overcome by the isolated and self-contained design of the fuse box, and all screws and terminals carrying current are enclosed in porcelain.

The white mica cover on the fuse box allows of perfect inspection at all times and an easy access if necessary, in addition to making a cover of high insulation and protecting terminals from moisture and dust.

The porcelain used in these boxes is the best China porcelain made in America, and is glazed throughout, adding to the strength of the plug and box, making the box generally neater and cleaner, as well as preventing any absorption of moisture to cause a ground on the transformer case or carry current after the fuse blows.

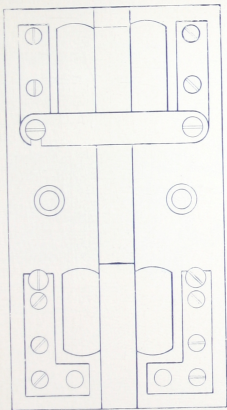
The spiral spring and adjustable ring are made of phosphor bronze and will not rust or deteriorate with age. All contacts are large and will carry ten times the current necessary. All parts are stamped out and made true to gauge by skilled workmen and the finished article is thoroughly tested. A few extra plugs will be sent with large orders gratis.

PORCELAIN TERMINAL BLOCK.

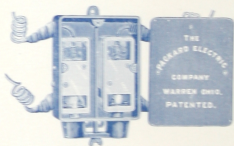


SHOWING CONNECTIONS FOR 50 VOLTS.

PORCELAIN TERMINAL BLOCK.



SHOWING CONNECTIONS FOR 100 VOLTS. IN 40 LIGHTS
AND ABOVE THESE ARE FURNISHED WITHOUT
EXTRA COST WHEN ORDERED.



**ISOLATED
FUSE
BOX.**

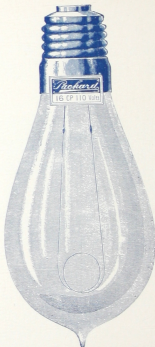
For use with our Oil Transformers,
and wherever it is necessary to pro-
tect a branch from the main primary
wires.

It consists simply of two
of our porcelain trans-
former cut-outs mount-
ed in an iron water-
proof case.



PACKARD INCANDESCENT LAMPS

5 TO 500 CANDLE POWER.



NEW YORK & OHIO CO.,

. MAKERS, .

WARREN, - OHIO.



